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EXAMINER	
LIN, KELVIN Y	

ART UNIT	PAPER NUMBER
2142	

DATE MAILED: 06/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/052,413	KAGAN ET AL.	
	Examiner	Art Unit	
	Kelvin Lin	2142	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 January 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-37* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-37* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Detailed Action

Response to Remarks

Application's argue with respect to claims 1, 17, and 33 have been considered but are moot in view of the new ground(s) of rejection.

1. Regarding claims 1, and 17, applicant argues that Dobbins teaching about caching is forwarding strategies for data packets, but not context information about transport service. And Dobbins fails to teach ".. the context information is used both for sending data packets from the host and receiving data from host from network...."

   Examiner contends Starr teaches that "..a cache memory associated with the packet processing circuitry and coupled to load from the system memory and store the context information of the respective transport service instances for the data packets being processed by the packet processing circuitry'. For example, in Starr's teaching that "... INIC memory also includes an interface file cache, INIC file cache, for temporary storage of data stored on or retrieved from INIC storage unit. Although INIC memory is depicted in FIG. 1 as a single block for clarity, memory may be formed of separate units disposed in various locations in the INIC (Starr, col.6, l.1-15).

   Additionally, Starr teaches that ".. a packet sent from a network such as LAN/WAN is first received at the INIC by the PHY unit, and the MAC unit performs link layer processing such as verifying that the packet is addressed to host. The network, transport and, optionally, session layer

headers of that packet are then processed (Starr, col.9, l.22-25).

Response to Amended Claims

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 17, 33, and 37 are rejected under 35 U.S.C 102(e) as being unpatentable over Starr et al., (U.S. Patent 6807581).

4. Regarding claim 1, Starr teaches a network interface adapter, comprising:

- a network interface, coupled to send and receive data packets over a network (Starr, col.3, l.12-16, col. 5, l.25-39, col.9, l.22-25);
- a host interface, for coupling to a host processor and to a system memory associated therewith (Starr, col. 5, l.25-52),

  the system memory containing context information with respect to a plurality of transport service instances used to send and receive the

data packets over the network, each of the data packets belonging to a respective one of the service instances (Starr, col.15, l.66-67, col.16, l.1-47);

- packet processing circuitry, coupled between the network interface and the host interface, and adapted to process the data packets using the context information of the respective service instances (Starr, col.13, l.30-67); and
- a cache memory associated with the packet processing circuitry and coupled to load from the system memory and store the context information of the respective transport service instances for the data packets being processed by the packet processing circuitry (Starr, col.6, l.1-15).

5. Claim 17 is a system claim, for claiming similar limitations as method claim 1, and is rejected for similar reasoning.

6. Claim 33 is similar to claim 1, for claiming host channel adapter comprising a switch fabric (Starr, col.18, l.59-61).

7. Claim 37 has similar limitation as claim 17 with variation for claimed limitation, i.e. instead of network adaptor and network, claim 37 disclosed a host channel adaptor and a switch fabric (Starr, col. 20, l.25-35, l.47-67). Therefore, claims 37 is rejected for the same reason set forth in the rejection of claims 17.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 2-16, 18-32, 34-36 are rejected under 35 U.S.C 103(a) as being unpatentable over Starr et al., in view of Dobbins et al., (US Patent No. 5509123).

9. Regarding claim 2, Starr further discloses an adapter according to claim 1, wherein the transport services instances have respective instance numbers, and wherein the cache memory comprises one or more tables having entries (Starr, col.22, l.1-15). But, Starr fails to teach the indexing by a portion of the service instance numbers.

Dobbins teaches the autonomous object for network layer routing (not router), which includes the interface among upper and lower layers indicating the context information of the respective transport service instances. And the host interface (iDobbins, FIG. 4) corresponds to host message queue, with host FAS object corresponding to FAS object, indexed by a portion of the service instance numbers (Dobbins, Fig. 15, col. 7, l.62-64, col. 8, l.1-2, col.28, l.2-3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time

the invention was made to combine the teaching of Starr and Dobbins because they both deal with host to network, and host to host file context information in the cache memory for the network.

10. Regarding claim 3, Dobbins further discloses an adapter according to claim 2, wherein the portion of the instance numbers comprises a predetermined number of the least significant bits of the instance numbers (Dobbins, col. 7, l.61-64, col.10, l.10-11.).

11. Regarding claim 4, Dobbins further discloses an adapter according to claim 2, wherein the one or more tables comprise at least two tables (Dobbins, Fig. 12, col. 9, l. 50-54).

12. Regarding claim 5, Dobbins further discloses an adapter according to claim 2, wherein the entries comprise respective target fields, corresponding to at least a segment of the service instance numbers of the service instances to which the entries belong (Dobbin, col. Col. 10, 10-12),
and wherein the target fields are compared to the segment of the service instance numbers of the data packets to determine that a cache hit has occurred (Dobbins, col. 10, l. 1-3),
whereupon the packet processing circuitry reads the context information from one of the tables (Dobbins, col.10, l.18-27).

13. Regarding claim 6, Dobbins further discloses an adapter according to claim 5, wherein when the cache hit does not occur, the context information is read from the system memory and loaded into the cache memory (Dobbins, col. 7, l.65-67).

14. Regarding claim 7, Dobbins further discloses an adapter according to claim 1, wherein the packet processing circuitry comprises a cache controller, which is adapted, responsive to a request from the circuitry to access the context information in the cache memory with respect to one of the service instances, to determine whether a cache hit has occurred, and when the cache hit has not occurred, to read the requested context information from the system memory and load the requested context information into the cache memory in place of the context information of another one of the service instances (Dobbins, col. 7, l. 65-67, col. 8, l. 1-30).

15. Regarding claim 8, Dobbins further discloses an adapter according to claim 7, wherein the context information is organized in the cache memory using a plurality of tables having entries referenced by respective indices (Dobbins, col.11, l.29-32),

and wherein the cache controller is adapted, while reading the requested context information from the system memory for one of the service instances having a given one of the indices, to block access by the packet processing circuitry to the context information of the service instances having the given one of the indices, while enabling the packet processing circuitry to access the context information of the service instances with other indices (Dobbins, col 14, l.10-11, col. 18, l.64-67, col.19, l.1-10) .

16. Regarding claim 9, Dobbins further discloses an adapter according to claim 7 wherein the cache controller is adapted, responsive to the request to access the

context information, to set a flag with respect to the service instance for which the context information is requested indicating that the context information is in use (Dobbins, col, 14, l.8-10)

and wherein the cache controller is further adapted, upon loading the context information into the cache memory, to store the loaded context information in the cache in place of the context information of another one of the service instances whose flag is not set (Dobbins, col.19, l.7-10).

17. Regarding claim 10, Dobbins further discloses an adapter according to claim 1, wherein the context information loaded into the cache memory comprises one or more fields that are updated by the packet processing circuitry in the course of processing the data packets (Dobbins, col.7, l.67), and

wherein the updated fields are copied back to the context information in the system memory after the data packets have been processed (Dobbins, col. 8, l.1-2).

18. Regarding claim 11, Dobbins further discloses an adapter according to claim 10, wherein the updated fields comprise packet serial numbers of packets processed by the circuitry (Dobbins, col. 8, l.1-2).

19. Regarding claim 12, Starr further discloses an adapter according to claim 1, wherein the context information stored in the cache memory comprises a send cache, containing the context information pertaining to packets generated responsive to requests submitted by the host processor, and a receive cache, containing the context information pertaining to packets generated responsive to

requests submitted to the adapter by remote entities over the network (Starr, col.7, l.43-65).

20. Regarding claim 13, Starr further discloses an adapter according to claim 1, wherein the packet processing circuitry comprises: an outgoing packet generator, adapted to generate the packets for delivery to remote entities via the network; and an incoming packet processor, coupled to receive and process the packets from the remote entities via the network, wherein both the outgoing packet generator and the incoming packet processor are coupled to access the same context information in the cache memory (Starr, col. 16, l. 1-29).

21. Regarding claim 14, Dobbins further discloses an adapter according to claim 13, wherein the outgoing packet generator is adapted to generate the packets for delivery to the remote entities responsive both to outgoing requests submitted by the host processor via the host interface and to incoming requests conveyed by the packets received from the remote entities (Dobbins, col. 6, l.38-40).

22. Regarding claim 15, Starr further discloses an adapter according to claim 14, wherein the incoming packet processor is adapted to process both the packets that are received from the remote entities responsive to the outgoing requests conveyed by the packets delivered to the remote entities and the packets that are received from the remote entities conveying the incoming requests (Starr, col. 3, l.28-33, col. 6, l.15-39).

23. Regarding claim 16, Starr further discloses an adapter according to claim 1,

wherein the transport service instances comprises queue pairs, which are used to interact with a transport layer of the network (Starr, col. 9, l.20-39, col.13, l.22-67, col.14, l.1-6).

24. Claims 18-32 have similar limitation as claims 2-16. Therefore, claims 18-32 are rejected under Dobbins for the same reason set forth in the rejection of claims 2-16.

25. Claims 34-36 have similar limitation as claims 13-15. Therefore, claims 34-36 are rejected under Dobbins for the same reason set forth in the rejection of claims 13-15.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kelvin Lin whose telephone number is 571-272-3898. The examiner can normally be reached on Flexible 4/9/5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rupal Dharia can be reached on 571-272-3880. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

5/31/05
KYL

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PRIMARY EXAMINER